PROJECT facts

U.S. DEPARTMENT OF ENERGY
OFFICE OF FOSSIL ENERGY
NATIONAL ENERGY TECHNOLOGY LABORATORY

Clean Coal Power Initiative (CCPI)

05/2005

MESABA ENERGY PROJECT

Project Description

Excelsior Energy Inc., an independent energy development company based in Minnetonka, Minnesota, will build, own and operate a full-scale demonstration of a state of the art Integrated Gasification Combined Cycle (IGCC) power plant using ConocoPhillips' E-Gas Technology for solid fuel gasification. This technology will be demonstrated at the Mesaba Energy Project ("Mesaba") to be located on Minnesota's Mesaba Iron Range. Mesaba will have an installed capacity of 531 MW (net) and is planned to be in service in 2010.

This project is one of two selected in Round 2 of the Department of Energy's (DOE) Clean Coal Power Initiative (CCPI) to demonstrate advanced power generation systems using IGCC technology. The fuel source, coal, is heated in a specialized process vessel with air and steam for conversion to desirable gaseous products, termed "syngas." The syngas is then consumed in a gas turbine to generate electricity, while the hot exhaust leaving the gas turbine is used to heat water for a steam turbine, which in turn generates additional electricity. This combined cycle significantly improves efficiency by increasing the amount of electricity that can be generated from a single ton of coal and does so with significantly lower emissions than a conventional coal-fired power plant.

The Mesaba project concept is based on technological advances that have been made since the Wabash River Coal Gasification Repowering Project (Wabash) in Terre Haute, Indiana – a previous DOE clean coal project. Mesaba will improve commercial performance by drawing upon the DOE-funded studies of potential performance and technological upgrades, operational lessons learned from eight years of hands-on operating experience and through research and development efforts of the DOE and ConocoPhillips' gasification team.

CONTACTS

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PARTICIPANT

Excelsior Energy, Inc.
Minnetonka, MN

LOCATION

Hoyt Lakes
St. Louis County, MN

TOTAL ESTIMATED COST

$1,600,000,000

COST SHARE

DOE

$36,000,000

Participant

$1,564,000,000

ADDITIONAL TEAM MEMBERS

Fluor

Aliso Viejo, CA

ConocoPhillips

Houston, TX

ESTIMATED PROJECT DURATION

92 months

ADDRESS

National Energy Technology Laboratory

3610 Collins Ferry Road
P.O. Box 880
Morgantown, WV 26507-0880

CUSTOMER SERVICE

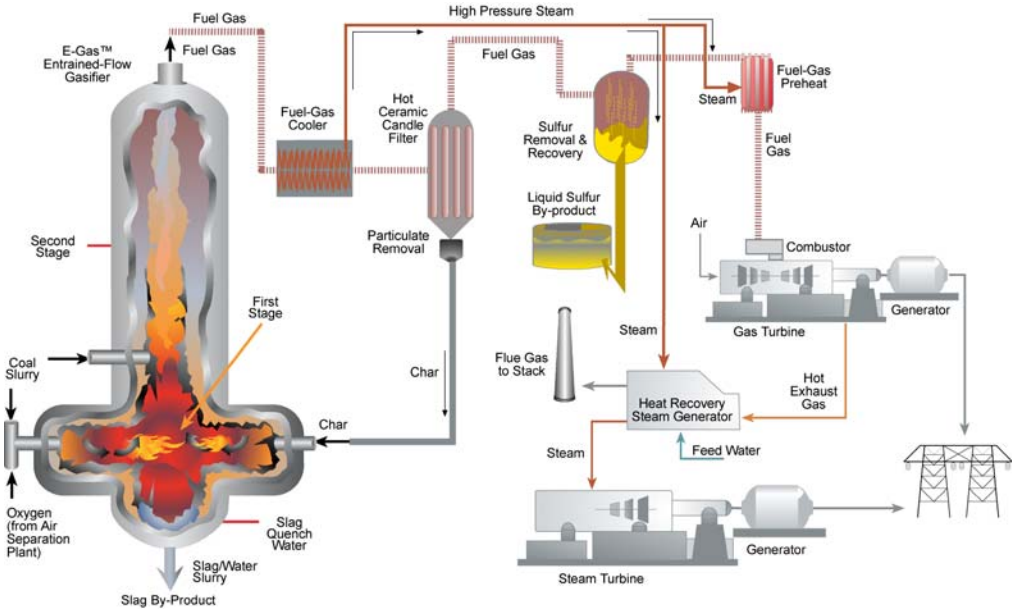
1-800-533-7681

WEBSITE:

www.netl.doe.gov

Benefits

As compared to traditional electric power generating plants and first generation IGCC, the Mesaba Energy Project will demonstrate significant performance, efficiency and emission improvements – making the demonstration plant one of the cleanest coal-fueled electric power generating plants in the world. Mesaba will demonstrate a 500-point increase in plant efficiency compared to first generation IGCC consuming similar fuel types. Mesaba will demonstrate long-term (30-day rolling average) criteria pollutant emission rates for SOx, NOx, mercury and particulate matter that will redefine what is considered best available control technology for coal-fueled electric power generating plants. Mesaba will control SOx by removal of sulfur compounds in the syngas, using carbonyl sulfide (COS) hydrolysis and amine solutions. Almost 99% of the sulfur is expected to be removed as elemental sulfur, a marketable by-product. Carbon dioxide emissions will be reduced by 15% compared to the 2004 average for currently operating coal-fueled electric power generating plants that consume similar fuel types. Mesaba can also be retrofitted for carbon dioxide capture in the event that greenhouse gas emission reductions are imposed by future regulations. Mesaba and other projects sponsored by the DOE will clear the path for other IGCC projects nationwide and worldwide, thereby facilitating a more cost-effective global response to any carbon reduction program required by law or treaty. Accelerating the deployment of advanced clean coal projects like Mesaba helps the industry meet the DOE's aggressive goals for coal-fired power generation



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